

Listing of the Claims

1. (Currently Amended) A magnetic localization device, comprising:
 - a) a field generator (2) for generating a magnetic field;
 - b) a field sensor (4) for measuring the magnetic field;
 - c) a reference sensor (3) for measuring the magnetic field at a known reference position;
 - d) a control unit (5), which is arranged for determining the position (\underline{x}) of the field sensor (4) relative to the field generator (2) and thereby for compensating external field distortions by taking the reference sensor (3) into consideration.

2. (Currently Amended) A localization device as claimed in claim 1, characterized ~~in that~~ wherein the spatial position of the field generator (2) is known.

3. (Currently Amended) A localization device (1) as claimed in claim 1, characterized ~~in that~~ wherein the field generator (2) and/or the reference sensor (3) are fastened to the gantry (1) of a computer tomograph.

4. (Currently Amended) A localization device as claimed in claim 1, characterized ~~in that~~ wherein the control unit (5) contains a memory with a calibration function ($\delta(\underline{x}, \Phi)$), which provides a correction shift (δ) for the uncorrected determined position (\underline{x}) of the field sensor (4) based on measured signals of the reference sensor (3) and the field sensor (4).

5. (Currently Amended) An examination device, comprising:
 - an imaging device, in particular a computer tomograph (1);
 - a magnetic localization device (2, 3, 4, 5) as claimed in ~~any one of the~~ claims 1 to 4.

6. (Currently Amended) A method for position measurement with a magnetic localization device ~~(2, 3, 4, 5)~~, comprising the steps of:

- a) collecting the signals of a field sensor ~~(4)~~ and/or a field generator ~~(2)~~;
- b) collecting the signals of a magnetic reference sensor ~~(3)~~, which is placed at a known spatial position relative to the field generator ~~(2)~~ or to the field sensor ~~(4)~~;
- c) determining the position ~~(\underline{x})~~ of the field sensor ~~(4)~~ relative to the field generator ~~(2)~~, where external field distortions are compensated by taking the signals of the reference sensor ~~(3)~~ into consideration.

7. (Currently Amended) A method as claimed in claim 6, ~~characterized in that~~ wherein a correction function ~~($\delta(\underline{x}, \Phi)$)~~ is determined, which indicates a correction shift ~~(δ)~~ for the uncorrected determined position of the field sensor ~~(4)~~ in dependence on the signal of the reference sensor ~~(3)~~ and the uncorrected determined position ~~(\underline{x})~~ of the field sensor ~~(4)~~.

8. (Currently Amended) A method as claimed in claim 7, ~~characterized in that~~ wherein the correction function ~~($\delta(\underline{x}, \Phi)$)~~ for support points in a volume of interest ~~(VOI)~~ is empirically determined and extended by extrapolation or interpolation respectively on the whole volume ~~(VOI)~~.

9. (Currently Amended) A method as claimed in claim 6, ~~characterized in that~~ wherein a parameter ~~(Φ)~~ is determined from the signal of the reference sensor ~~(3)~~, which parameter characterizes the external field distortion.

10. (Currently Amended) A method as claimed in claim 9, ~~characterized in that~~ wherein the parameter ~~(Φ)~~ describes the angle of rotation of a computer tomograph ~~(1)~~ situated in the vicinity of the localization device.